LOCAL AGENCY FORMATION COMMISSION OF NAPA COUNTY

COMPREHENSIVE STUDY
NAPA COUNTY MOSQUITO ABATMENT DISTRICT

PUBLIC WORKSHOP REPORT

OCTOBER 2004

LAFCO of Napa County
Daniel Schwarz, Executive Officer
Keene Simonds, Analyst
Kathy Mabry, Commission Secretary

1700 Second Street, Suite 268
Napa, California 94559
(707) 259-8645
http://napa.lafco.ca.gov

INTRODUCTION

On January 1, 2001, the Cortese-Knox-Hertzberg Local Government Reorganization Act became the governing law of LAFCOs. One change brought by this Act was the creation of a new LAFCO function, the service review. Government Code §56430 states that prior to any review or update of a sphere of influence, the Commission shall conduct a service review – a comprehensive evaluation of the ability of the agency to provide service within its existing jurisdiction and within its sphere. Government Code §56425(f) states that the Commission shall update all spheres every five years, meaning that the Commission must also conduct service reviews on a five-year cycle. Each of the 58 LAFCOs may adopt their own approach to fulfilling the service review and sphere update requirements.

To fulfill these responsibilities, LAFCO of Napa County adopted a schedule for service reviews and sphere updates to begin in late 2001 and end in late 2005. In developing this schedule, the Commission determined that the complex assignment before it must be accomplished through a series of studies. Some of these studies are designed to conduct an analysis of one type of service across many agencies and/or areas in Napa County, while other studies focus on the breadth of services offered by one agency. Overlap is an inherent component of this approach – any given agency may be evaluated in the context of several studies. As a result, there is the possibility that reports later in the schedule will give rise to reconsideration of conclusions drawn in an earlier study. In addition, this approach means that LAFCO will not fully meet its statutory obligations until the completion of its adopted schedule. When the schedule is completed, the Commission will evaluate the need for future studies and develop a schedule for the 2006-2010 cycle.

This report is the first phase of LAFCO of Napa County's *Comprehensive Study of the Napa County Mosquito Abatement District*. "Phase One" includes a detailed review of the vector-control services currently provided by the District. The underlying objective of Phase One is to present an accurate description of the various services provided by the District in anticipation of "Phase Two": the development of written determinations pursuant to Government Code §56430. This codes section requires the Commission to make determinations concerning nine specific service factors as part of the service review process. These factors are:

1. Infrastructure needs or deficiencies.
2. Growth and population projections for the affected area.
3. Financing constraints and opportunities.
4. Cost avoidance opportunities.
5. Opportunities for rate restructuring.
6. Opportunities for shared facilities.
7. Government structure options.
8. Evaluation of management efficiencies.
9. Local accountability and governance.

To facilitate the public review of Phase One, the Commission will conduct a public workshop at its October 14, 2004 meeting. The public workshop will include a presentation by staff providing an overview of initial findings concerning the District and allow the Commission to provide direction to staff as to the content of the study. Phase Two will begin following the public workshop and extend through the public review period. During this time, staff will incorporate public comments (written and oral) and direction from the Commission in developing draft determinations based on information collected and analyzed in accordance with the Cortese-Knox-Hertzberg Act. It is anticipated that draft determinations will be presented to the Commission for a first-reading at its December 9, 2004 meeting.

The sphere of influence review of the District will begin following the adoption of written determinations and will be presented to the Commission at a future hearing.

Geographic Area of Service Review

The geographic region of this review is the entire jurisdictional boundary of the Napa County Mosquito Abatement District, which includes all lands located within Napa County.

OVERVIEW

The Napa County Mosquito Abatement District (NCMAD) was formed in 1925 to provide mosquito control services for residents of Napa County. The formation of the District was prompted in the early 1920s by the emergence of mosquitoes in the southern portions of the County, an area characterized by numerous wetlands and salt marshes. In an effort to address the threat of mosquito-borne diseases and provide protection for livestock, local landowners in the Carneros region joined forces with the Carneros Farm Center and the Las Amigas Farm Bureau. The group's aim was to galvanize support for the formation of a countywide mosquito abatement district. Formation of this type of district was allowed by the California Legislature with the passage of the Mosquito Abatement District Act of 1915. The law was enacted by legislators to facilitate the formation of public agencies capable of providing protection against vector-borne diseases, such as malaria and encephalitis, and other pest related nuisances.[1] Following resolutions supporting formation adopted by the three cities of Napa County (Calistoga, Napa, and St. Helena), the Napa County Board of Supervisors adopted a resolution establishing the District on July 14, 1925.

In 1926, NCMAD conducted the first comprehensive mosquito survey of Napa County. The survey, which mapped breeding areas within the County, was followed by the implementation of physical control measures as part of a coordinated mosquito management program. This included building dykes and levees along with ditching and plowing cracked ground. These labor-intensive activities were conducted with assistance from local inmates who were used frequently by the District as a supplemental work force. This practice, however, was discontinued in the 1950s due to increased public concern over the use of inmate labor. Other methods implemented during this period included chemical and biological control measures, such as applying pesticides and stocking local waterways with "mosquitofish" (*Gambusia affinis*).

By the 1960s, following advances in chemical engineering along with budgetary constraints, NCMAD began to emphasize the use of pesticides to control both larvae and adult mosquitoes. This included the use of dichlorodiphenyltrichloroethane (DDT).[2] By the 1970s, however, new federal and state regulations, along with increased public concern regarding the use of chemicals on the environment, prompted a significant change in the District's control activities. To minimize its use of pesticides, the District began to emphasize the control of larvae rather than adult mosquitoes. This change resulted in a renewed emphasis on mosquito prevention through physical and biological control measures as well as community education.

In 1978, California voters approved Proposition 13, which limited annual property taxes to one percent of assessed value while requiring two-thirds voter approval to raise new taxes. At the time, NCMAD's budget was almost entirely dependent on revenue

[1] California Health and Safety Code defines "vector" as any animal capable of transmitting a human disease or producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and rodents and other vertebrates (HSC §2002(k)).

[2] DDT was banned by the United States Environmental Protection Agency in 1973.

generated from an allocation of local property tax proceeds. The reduction in property tax proceeds, coupled with increasing costs, significantly constrained operations for the District. By the end of the 1980s, the District's expenses outpaced its revenues. Although staffing was reduced to help meet costs, operating deficits persisted throughout the late 1980s and early 1990s. As a result, the District borrowed money from the County to help cover annual losses.

In the late 1990s, NCMAD took a series of steps to achieve fiscal solvency and advance its mosquito management program. Notably, the District developed a service program with local landowners to help recover the costs of servicing lands with chronic mosquito problems. The District also benefited from a 2002 review and update to the California Health and Safety Code. This process clarified and strengthened the District's ability to recover costs from negligent property owners with reoccurring mosquito problems.

Measures to advance NCMAD's mosquito management program included the hiring of a new manager and issuing an in-depth evaluation of its control services as part of its *Integrated Mosquito Management Program (1999)*. The evaluation, which included a review of potential environmental impacts, formalized the District's mosquito management program to include six coordinated activities. These activities include surveillance, physical control, vegetation management, biological control, chemical control, and community education.

In 2003, to enhance its revenue stream, NCMAD asked County property owners to approve an annual parcel assessment to help strengthen its mosquito management program and fund additional vector control services.[3] The assessment was also sought to help prepare for the anticipated arrival of the West Nile Virus in the County by 2004. The assessment was conducted by mail-in ballot and was approved by two-thirds of responding property owners. Initial revenues generated from the assessment have been used to increase staff, raise public awareness regarding West Nile Virus, and develop three new vector control programs relating to yellowjackets, ticks, and rodents.

GOVERNANCE AND PRINCIPAL ACT POWERS

NCMAD was originally organized under the Mosquito Abatement District Act of 1915 (Health and Safety Code §2000-2093). This Act was amended in 2002 and is now referred to as the Mosquito Abatement and Vector Control District Law. The District's governing body is comprised of an appointed six-member board of trustees. District trustees are composed of appointed members from each of the five cities and County and serve two-year or four-year staggered terms: term lengths and reappointments are at the discretion of the appointing jurisdiction. In addition to electing a president, the District is required to elect a secretary at the first meeting in January. A secretary may be either a trustee or employee of the District.

[3] In 2003/2004 fiscal year, the annual assessment for a single-family residence was $15. The assessment is set for adjustment according to the U.S. Department of Labor's Consumer Price Index. The maximum annual increase is three percent. The increase, which is not automatic, is exercised at the discretion of the District.

NCMAD services can be financed through property taxes, special taxes, special benefit assessments, fees, and fines.[4] District board meetings are conducted on the second Wednesday of every month at its administrative office in American Canyon. Meetings are open to the public. Although they serve without regular compensation, trustees receive $49.50 per month for expenses incurred while conducting business on behalf of the District. Pursuant to the Mosquito Abatement and Vector Control District Law, the District is authorized to provide the following municipal services:

- Conduct surveillance programs and other appropriate studies of vectors and vector-borne diseases (HSC §2040-a)

- Take any and all necessary or proper actions to prevent the occurrence of vectors and vector-borne diseases (HSC §2040-b)

- Take any and all necessary or proper actions to abate or control vectors and vector-borne diseases (HSC §2040-c)

ADOPTED BOUNDARIES

NCMAD's adopted jurisdictional boundary is comprised of one contiguous area consisting of approximately 506,517 acres. The District's jurisdictional boundary is conterminous with its sphere of influence and includes all lands within Napa County (Attachment One). Accordingly, the District is under the land use authority of multiple jurisdictions, including the County of Napa and the Cities of American Canyon, Calistoga, Napa, St. Helena, and the Town of Yountville.[5]

NCMAD – Adopted Boundaries	
Jurisdictional Boundary:	506,517 acres *
Sphere of Influence Boundary:	506,517 acres *

* Figures are approximations calculated using information generated by LAFCO and County of Napa's geographic information systems.

SERVICE OPERATIONS

NCMAD's vector control services include a long-standing mosquito management program and three new programs relating to yellowjackets, ticks, and rodents. The new programs were initiated in late 2003 and are not fully developed at this time.

[4] California Health and Safety Code allows NCMAD to impose a civil penalty – not to exceed $1,000 per day – against any landowner for each day that the owner fails to comply with its requirements with respect to preventing a vector-borne nuisance on his or her property (HSC §2063). This penalty is applied in the form of a lien on the landowner's property.

[5] Pursuant to California Health and Safety Code §2040, NCMAD regularly conducts operations outside its jurisdictional boundary when such operations are to the benefit of Napa County residents.

Administration and Staff:
The District's vector control services are managed and operated by its staff. A manager is appointed by the board of trustees to administer the adopted policies of the District and provide direction to staff. The District's administrative office is located at 15 Melvin Road in the City of American Canyon. Office hours are Monday through Friday between 8:00 am and 4:30 pm. Staff is currently comprised of nine full-time employees. This includes a manager, office assistant, entomologist, and six field technicians.

Field Services:
The District divides Napa County into six service zones (Attachment Two). The District's six field technicians are assigned to zones based on need. All District staff are certified by the California Department of Health Services (DHS) as "vector control technicians." This permits each staff member to use pesticides for the purposes of mosquito control, invertebrate vector control, and vertebrate vector control. Staff must annually complete three all-day training and safety classes as part of their certification. In addition, staff must participate in quarterly training sessions held by the District.

SERVICE DEMANDS

NCMAD service demands relating to mosquito control are based on a combination of factors, including seasonal conditions, breeding habits, and the presence of stagnant water. Between late fall and early spring, the District typically provides extensive surveillance and control work for seasonal wetlands and marshes, as stagnant water develops and becomes host to the Winter Marsh Mosquito and the Winter Salt Marsh Mosquito. During late spring through early fall, the District normally transitions its surveillance and control work to ditches, creeks, wastewater ponds, tidal marshes, fish ponds, man-made containers, and storm water systems, as irrigation, sewage, and storm waters stagnate and become host to various mosquito species. This includes the Summer Salt Marsh Mosquito, Little Horse Mosquito, Encephalitis Mosquito, Fish Pond Mosquito, Foul Water Mosquito, and the Western Treehole Mosquito.

Collectively, these efforts supplement year-round activities conducted by NCMAD to monitor and control other mosquito species commonly found in the County throughout various times of the year. Service demands relating to yellowjackets primarily occur during the summer months, while service demands relating to ticks and rodents are generally year-round. Other factors impacting service demands include development projects, community concerns, and the emergence of new vector-borne diseases and viruses.

Service Calls:
In 2003, the District received approximately 1,500 service calls. All calls resulted in a field investigation. The District does not charge a service fee to property owners unless their land develops a reoccurring and long-term mosquito problem.

Service Contracts:
The District currently maintains 14 service contracts with local property owners throughout the Napa Valley to provide long-term mosquito control services for their land. These property owners pay a flat hourly labor charge and reimburse the District for the cost of materials, such as pesticides or rental of special equipment.[6]

MOSQUITO MANAGEMENT PROGRAM

NCMAD provides mosquito control services for Napa County residents through various surveillance and control measures. These activities collectively constitute the District's mosquito management program. The primary objective of this program is to prevent the emergence of adult mosquitoes while minimizing impacts to the environment by emphasizing long-term forms of control (i.e., non-chemical). In 1999, to formalize the program, the District issued a comprehensive study of its mosquito control services with respect to the California Environmental Quality Act. The study, which included an adopted mitigated negative declaration, concluded that the program would not result in a significant impact to the environment based on the application of mitigating measures.

The District's mosquito management program is comprised of six coordinated activities. These activities include surveillance, physical control, vegetation management, biological control, chemical control, and community education. These activities are summarized below.

Surveillance:
Surveillance serves as the District's initial tool to monitor and control mosquitoes within the County. The District's surveillance programs are facilitated through trapping systems, field investigations, and the use of sentinel chickens.[7] The information generated from surveillance helps the District evaluate the type and number of mosquitoes within a targeted area along with identifying the presence of vector-borne diseases. Surveillance is also used to help measure the effectiveness of any given control activity undertaken by the District. Blood samples collected by the District from sentinel chickens are analyzed by DHS in Richmond, California.[8] Samples of mosquitoes, yellowjackets, and ticks collected by the District are analyzed by staff.

Physical Control:
Physical control serves as the District's primary tool to reduce mosquito habitat by modifying land to help remove natural and man-made breeding grounds. This includes building dykes and levees along with ditching and plowing cracked ground. These actions help to eliminate stagnant water sources by improving water circulation and drainage of low-lying areas and local waterways. The District maintains a regional

[6] NCMAD's flat hourly labor rate is currently $38.39 and is adjusted according to the Consumer Price Index.

[7] NCMAD presently maintains six sentinel chicken stations located throughout Napa County. Each station consist of ten chickens. The chickens, which are immune to most vector-borne diseases, are routinely tested for exposure to Western Equine Encephalitis, Saint Louis Encephalitis, and West Nile Virus.

[8] In 2003, NCMAD collected 140 blood samples. All 140 samples tested negative for a vector-borne disease.

permit with DHS, which is issued by the United States Army Corps of Engineers. DHS reviews all proposed work plans by the District prior to implementation to ensure conformance with environmental regulations.[9]

Vegetation Management:
The District occasionally supplements its physical control activities with a vegetation management program. In addition to the physical removal of vegetation, this program involves the application of herbicides within terminal water bodies, such as wastewater ponds, to impede growth and improve water circulation. Common herbicides used by the District include Round Up, Rodeo, and Karmex DF.

Biological Control:
Biological control is used by the District both as a long-term and short-term strategy to manage larvae and prevent adult emergence. The District's primary biological control method involves stocking ponds, reservoirs, and other stagnant water sources with mosquitofish, which feed on larvae. Mosquitofish provide long-term control of larvae to permanent water bodies based on their reproductive capabilities.[10] Other biological control methods used by the District include applying spores generated from the bacterium *Bacillus thuringiensis israelensis* (Bti) to stagnant water sources. This method provides only short-term control of larvae due to its low residual effect and requires frequent and timely applications to ensure effectiveness.

Chemical Control:
Chemical control is a short-term strategy used by the District to manage both larvae and adult mosquitoes by applying pesticides either by hand, machine, or aircraft. Pesticides are not used unless the District determines that other control measures would be ineffective in mitigating the mosquito population. Primary deterrents associated with the use of pesticides include cost, low residual effects, and environmental considerations. All pesticides used by the District are registered with the California Department of Pesticide Regulation and are summarized in a monthly "Pesticide Use Report" for the Napa County Agricultural Commissioner.[11]

The District's pesticide program is comprised of larvicides (larvae control) and adulticides (adult control). Larvicides regularly used by the District include the insect growth regulator Methoprene and Golden Bear 1111. These pesticides are applied using various forms of distribution and are effective against all mosquito species. Pyrethrum is the only adulticide used by the District. This pesticide is used to control the Western Treehole Mosquito and is distributed using a truck mounted ultra-low volume mist machine during the early morning hours when winds are minimal. Pesticides commonly used by the District in 2003 are identified below:

[9] NCMAD work plans are also reviewed for environmental conformance by the U.S. Fish and Wildlife Service, California Department of Fish and Game, Army Corp. of Engineers, San Francisco Bay Conservation and Development Commission, and several local environmental organizations.

[10] In 2003, NCMAD released approximately 20 pounds of mosquitofish in several permanent water bodies throughout the County. The District also provided approximately 30 pounds of mosquitofish to the public.

[11] All pesticide work performed by NCMAD is done through a cooperative agreement with DHS.

NCMAD – Pesticide Use Amount for 2003		
Pesticide	**No. Applications**	**Total Amount**
Karmex DF*	103	4,402 pounds
Rodeo*	43	82 gallons
Round-Up*	21	43.75 gallons
Bti	239	218.25 gallons
Methoprene	258	57.82 gallons
Golden Bear 1111*	227	946.61 gallons
Pyrethrum	218	67.04 gallons
Drione*	40	8 pounds
Wasp Freeze*	9	3.25 gallons
Oust*	105	96.77 pounds

* Commercial Name Brands

Community Education:
The District offers a variety of community education tools aimed at raising public awareness regarding ways to help prevent and reduce local mosquito populations along with their disease potential. This includes posting educational information on the District's website, distributing brochures, presenting to schools, home associations, and service clubs, and attending the annual Napa-Solano Home and Garden Show.

Mosquito Species of Napa County

NCMAD reports that there are 20 mosquito species within Napa County. Most of these species breed in specific habitats characterized by the presence of stagnant water and are all capable of creating nuisance, whether physical or economical.[12] There are ten mosquitoes species commonly found in the County. They are the Banded Foul Water Mosquito, Encephalitis Mosquito, Fish Pond Mosquito, Little House Mosquito, Summer Salt Marsh Mosquito, Western Treehole Mosquito, Winter Marsh Mosquito, Winter Salt Marsh Mosquito, Woodland Malaria Mosquito, and the Woodland Pool Mosquito.

Known mosquito-borne diseases detected in the County include Western Equine Encephalitis and Canine Heartworm.[13] Western Equine Encephalitis affects humans and is known as the "sleeping sickness." Symptoms associated with this virus range from mild headaches to brain inflammation. The primary transmitter of this virus is the Encephalitis Mosquito, which breeds in fresh and brackish water sources and is present throughout the year. Canine Heartworm, which affects dogs, coyotes, and foxes, leads to the development of worm-parasites within the infected animal's heart and lungs. This parasite is primarily transmitted by the Western Treehole Mosquito, which breeds in the holes and cavities of trees, and is typically present between March and July.

[12] There are four components to a mosquito's life cycle: egg, larva, pupa, and adult. Depending on the type of mosquito, the development cycle from egg to adult ranges from one week to four months. The life span of an adult mosquito ranges from two weeks to two months.

[13] NCMAD reports that Western Equine Encephalitis was last found in Napa County in 1996. Conversely, Canine Heartworm is prevalent throughout the wooded areas of the County.

Other viruses regularly monitored by the District include Saint Louis Encephalitis and West Nile Virus. Saint Louis Encephalitis, which can result in symptoms similar to Western Equine Encephalitis, affects humans, animals, and birds, and is prone to outbreaks since being first detected in St. Louis, Missouri in 1933. There has not been a reported case of Saint Louis Encephalitis in the County. The West Nile Virus also affects humans, animals, and birds, and causes symptoms similar to Saint Louis Encephalitis. However, unlike Saint Louis Encephalitis, West Nile Virus is relatively new to North America. Exposure to this virus has a higher risk of contagiousness relative to other mosquito-borne viruses due to the lack of antibodies within the population. The first documented case of West Nile Virus in the County occurred on August 4, 2004.[14]

ADDITIONAL PROGRAMS

In late 2003, NCMAD expanded its services to include three new vector control programs. These programs, which vary in scope, relate to yellowjackets, ticks, and rodents. Funding for these programs derives from part of an annual assessment approved by Napa County property owners in July of 2003; actual proceeds generated from this assessment were made available to the District beginning in December 2003. These additional vector control programs are summarized below.

Yellowjacket Control Program:
The District's Yellowjacket Control Program is comprised of two coordinated activities aimed at controlling and managing yellowjackets in Napa County. These activities include chemical control and community education. Chemical control is achieved by applying a pesticide (Drione) to a yellowjacket's nest, while community education is achieved by answering constituent inquiries, public speaking events, brochures, and posting information on the District's website.

Tick Surveillance and Disease Testing Program:
The District's Tick Surveillance and Disease Testing Program is comprised of monitoring and community education relating to ticks and their disease potential. Surveillance is achieved through trapping systems and field investigations. Ticks collected by the District are tested for Rocky Mountain Spotted Fever and Lyme Disease. These efforts are complemented by the District's public outreach activities. These include answering constituent inquiries, public speaking events, brochures, and posting information on the District's website.

Rodent Control Program:
The District's Rodent Control Program currently consists of community education and field trappings. Community education is provided by answering constituent's questions and posting information on the District's website. Field trappings are achieved through bait stations, which are placed at the request of the landowner. Some rodents are also tested for rodent-borne diseases as part of a regional plague surveillance program, which is coordinated by DHS. This includes testing for Hantavirus and Arenavirus.

[14] West Nile Virus case involved a dead American Crow found in the City of Napa.

FINANCIAL

NCMAD has an approved operating budget for 2003-2004 of $1,681,833. Expenses for the District are divided into three categories: salaries and benefits; services and supplies; and assets and equipment. Appropriations for these categories for the 2003-2004 fiscal year are $563,833, $328,000, and $739,000 respectively.[15] The District also includes a fixed contingency amount as part of its annual budget. In 2003-2004, this amount is $51,000.

The District's projected revenue for 2003-2004 is $1,407,000. Primary revenue sources include special assessment funds, property tax proceeds, and service charges. The District currently maintains a carryover reserve of approximately $370,000 from the 2002-2003 fiscal year. In addition to covering shortfalls, this reserve is used to help cover all costs between July and December prior to the first distribution of property and assessment funds.

NCMAD – Approved Budget (2003-2004)	
Expense Category	**Amount**
Salaries and Benefits:	$563,833 (34%)
Services and Supplies:	$328,000 (19%)
Assets and Equipment:	$739,000 (44%)
Contingencies:	$51,000 (3%)
Total Expenses:	**$1,681,833***

NCMAD – Projected Revenues (2003-2004)	
Revenue Source	**Amount**
Special Assessment:	$711,000 (50%)
Property Taxes:	$643,000 (46%)
Service Charges:	$30,000 (2%)
Interest on Property Taxes:	$15,000 (1%)
Supplemental Property Taxes:	$5,000 (.04%)
Miscellaneous:	$3,000 (.02%)
Total Projected Revenue:	**$1,407,000***

* An operating deficit of $274,833 is projected for the 2003-2004 fiscal year, which is due to the cost of the District's new administration building. The District will be reimbursed for its construction costs from funds generated as part of the Napa County Flood Project ("Measure A"). In the interim, funds from the District's carryover reserve will be applied to cover the deficit.

[15] Approximately $540,000 of the $739,000 appropriated for assets and equipment for the 2003-2004 fiscal year is for the purchase and construction of NCMAD's new administration office. Construction of the new administration building, which is scheduled to be complete by October 2004, will represent the first time the District will occupy a permanent structure.

SOURCES

Agency Contacts:

- Napa County Mosquito Abatement District
- California Department of Pesticide Regulations
- Napa County Agricultural Commissioner

Documents/Materials:

- Napa County Mosquito Abatement District, Re: Response, "LAFCO Questionnaire," January 16, 2004
- Napa County Mosquito Abatement District, Re: Response, "LAFCO Supplemental Questionnaire," August 23, 2004
- Napa County Mosquito Abatement District, Re: Response, "LAFCO Technical Review Draft Report," August 23, 2004
- Napa County Mosquito Abatement District, "2003-2004 Budget," August 6, 2004
- LAFCO of Napa County, "Napa County Mosquito Abatement District Baseline Report and Sphere of Influence Establishment," November 28,1984
- Napa County Mosquito Abatement District, "Integrated Mosquito Management Program," October1999
- Napa County Mosquito Abatement District, Re: Letter, "LAFCO of Napa County: Request for Information," August 15, 1974

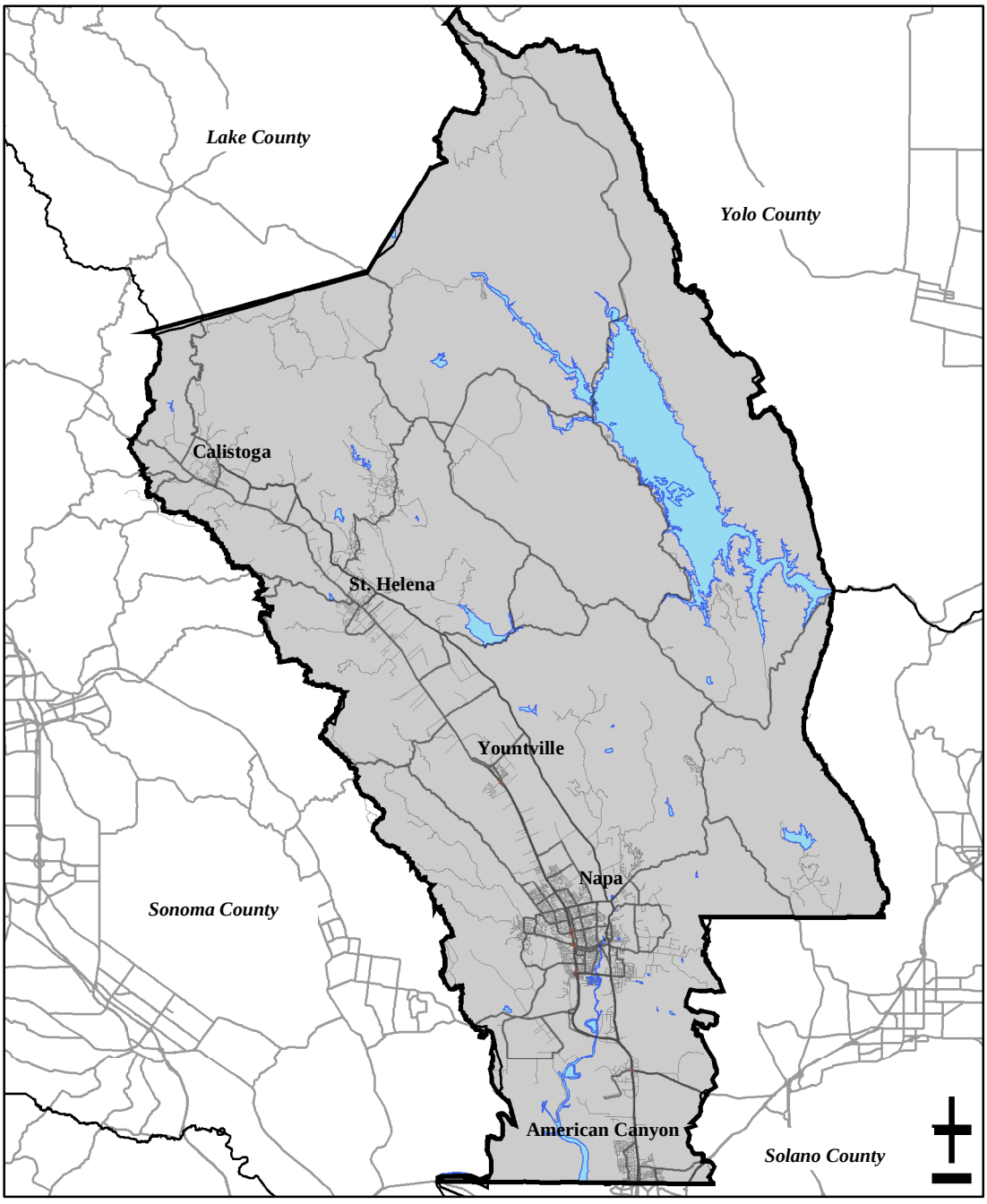
Newspaper/Journal Articles:

- Whitthorne, Robert, "Mosquito Control in the Napa Valley," *Napa County Historical Society*, February 1969
- Yountville Sun, "Voters Elect More Mosquito Tax," July 24, 2003

Worldwide Web:

- Napa County Mosquito Abatement District: http://www.napamosquito.com (April 20, 2004)
- U.S. Environmental Protection Agency; Pesticides, Mosquito Control: http://www.epa.gov/pesticides/factsheets/skeeters.htm (April 12, 2004)
- Centers for Disease Control; Division of Vector-Borne Diseases: http://www.cdc.gov/ncidod/dvbid/index.htm (April 13, 2004)

NAPA COUNTY MOSQUITO ABATEMENT DISTRICT



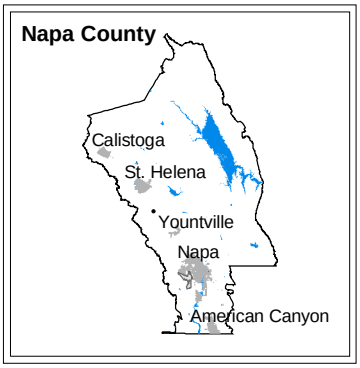
LEGEND

NCMAD BOUNDARY

NCMAD SPHERE

Last Revised: August 24, 2004
Source: Napa County GIS
Not to Scale

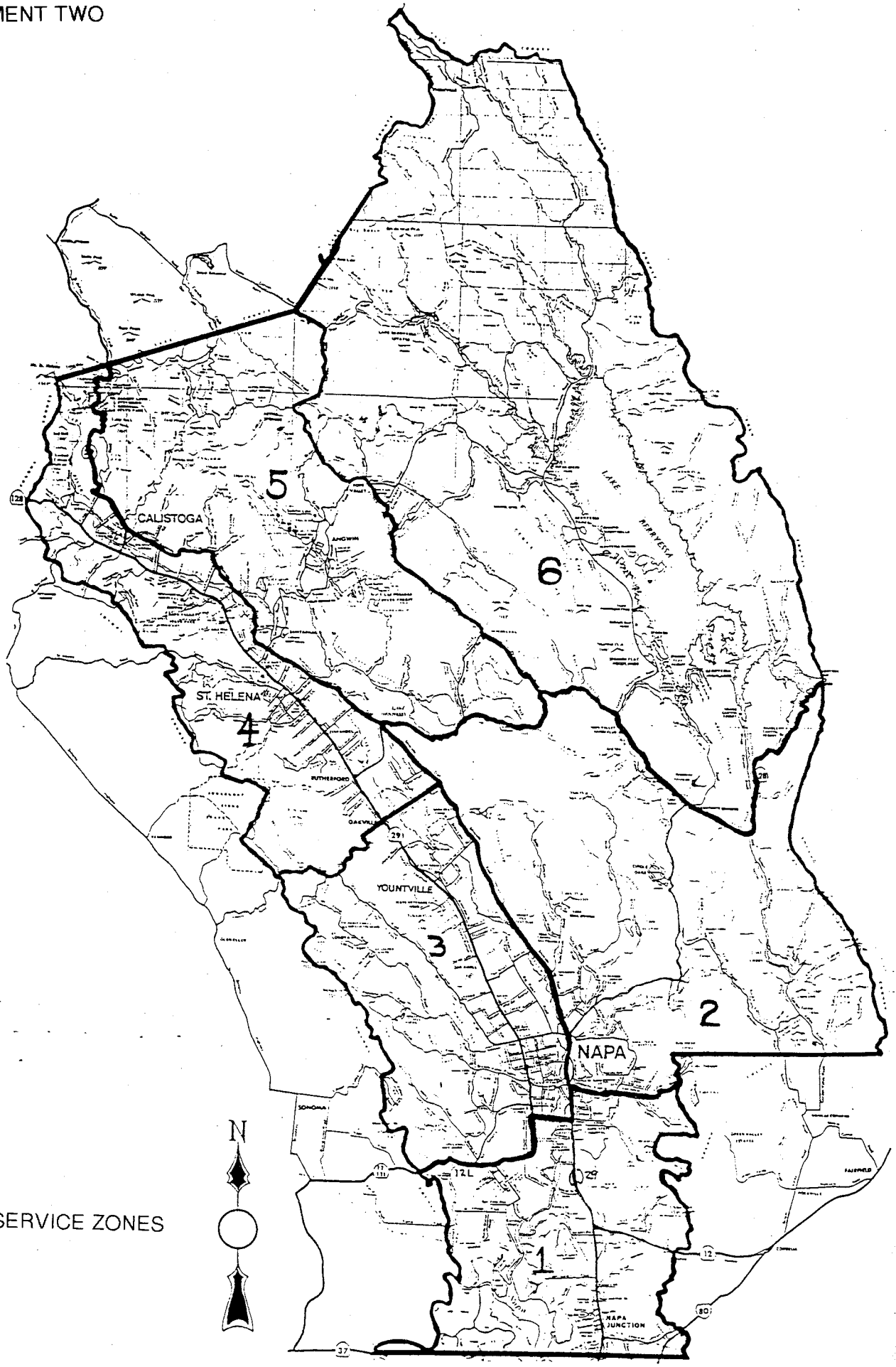
AREA MAP



Local Agency Formation Commission
LAFCO
Napa County

Prepared by: KS

ATTACHMENT TWO



NCMAD SERVICE ZONES